

Appl. No.: 10/762,495
Atty. Docket: 2003B004/2
Amdmnt. dated March 13, 2007
Reply to Office Action of December 14, 2006

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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A process for quenching a reactor effluent stream from an oxygenate to olefins reactor, the process comprising the steps of:
 - (a) quenching the reactor effluent stream in a first quench stage with a first quench medium comprising an aqueous solution to form a first liquid fraction and a first effluent stream, wherein catalyst fines are washed from the reactor effluent stream into the first liquid fraction;
 - (b) quenching the first effluent stream in a second quench stage with the first quench medium producing a second liquid fraction and a second effluent stream, wherein the second liquid fraction is cooled to form the first quench medium; and
 - (c) quenching the second effluent stream in a third quench stage with a second quench medium comprising a substantially oxygenate-free quench medium settling catalyst fines entrained in the first liquid fraction in a first settling vessel; and
 - (d) removing at least a portion of the first liquid fraction from the first settling vessel.
2. (Currently Amended) The process of claim 1, wherein the reactor effluent stream comprises olefin product and water, the reactor effluent stream further being entrained with the catalyst fines, wherein the first liquid fraction has no more than 20 wt.% water based upon the weight of water in the reactor effluent stream and a majority of catalyst fines based upon the amount of catalyst fines in the reactor effluent stream.
3. (Currently Amended) The process of claim 1, wherein the reactor effluent stream comprises olefin product and water, the reactor effluent stream further being entrained with the

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catalyst fines, wherein the second quench stage removes a majority of water based upon the amount of water in the reactor effluent stream.

4. (Currently Amended) The process of claim 1, wherein the reactor effluent stream comprises olefin product and methanol, the reactor effluent stream further being entrained with the catalyst fines, wherein [[the]] a third quench stage removes a majority of methanol based upon the amount of water in the effluent stream.

5. (Currently Amended) The process of claim 1, wherein the reactor effluent stream comprises olefin product, methanol, and water, the reactor effluent stream further being entrained with the catalyst fines, wherein:

the first liquid fraction has no more than 20 wt.% water based upon the weight of water in the reactor effluent stream and a majority of catalyst fines based upon the amount of catalyst fines in the reactor effluent stream;

the second quench stage removes a majority of water based upon the amount of water in the reactor effluent stream; and

[[the]] a third quench stage removes a majority of methanol based upon the amount of methanol in the reactor effluent stream.

6. (Canceled)

7. (Currently Amended) The process of ~~claim 6~~ claim 1, wherein the first quench stage comprises a quench fitting and a first settling vessel, the first settling vessel having a top end, a bottom end, a first passage at the top end, a first outlet at the bottom end, and a second outlet between the top end and the bottom end, the process further comprises the steps of:

[[(e)]] withdrawing the first effluent stream through the first passage;

[[(f)]] separating, in the first settling vessel, a first portion of catalyst fines in the first liquid fraction from a partially clarified first liquid fraction, the partially clarified first liquid fraction comprising a second portion of the catalyst fines;

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[[(g)]] withdrawing a first concentrated fines stream comprising the first portion of catalyst fines from the first outlet; and
[[(h)]] withdrawing the partially clarified first liquid fraction from the second outlet.

8. (Currently Amended) The process of claim 7, wherein the partially clarified liquid fraction is directed to a second settling vessel, the partially clarified liquid stream further comprises a hydrocarbon phase, and the process further comprises the steps of:

[[(i)]] withdrawing a second concentrated fines stream from the second settling vessel, the second concentrated fines stream comprises substantially all of the second portion of catalyst fines from the second settling vessel;
[[(j)]] combining the second concentrated fines stream with the first concentrated fines stream;
[[(k)]] withdrawing a clarified aqueous stream; and
[[(l)]] withdrawing a non-aqueous stream.

9. (Currently Amended) The process of claim 8, wherein the clarified aqueous stream comprises water and methanol, the process further comprising the steps of:

[[(m)]] separating the clarified aqueous stream into a methanol fraction and a water fraction; and
[[(n)]] feeding the methanol fraction into the oxygenate to olefin reactor.

10. (Original) The process of claim 7, wherein the quench fitting is a tubular member comprising a plurality of spray nozzles configured to spray the first quench medium into the reactor effluent stream.

11. (Original) The process of claim 5, wherein the second quench stage has a first quench inlet and a second quench inlet located above the first quench inlet, the process further comprising the step of:

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introducing the first quench medium into the first quench inlet at a first temperature and the second quench inlet at a second temperature that is at least about 2.7°C lower than the first temperature.

12. (Original) The process of claim 11, wherein the second temperature is at least 5.6°C lower than the first temperature.

13. (Original) The process of claim 11, wherein the second temperature is at least 11°C lower than the first temperature.

14. (Currently Amended) The process of claim 11, wherein the second quench stage further comprises a first condensate outlet, the process further comprising the steps of:

[[(i)]] withdrawing a portion of the second liquid fraction from the first condensate outlet; and

[[(ii)]] directing the portion of the second liquid fraction to the first quench inlet and the second quench inlet.

15. (Original) The process of claim 8, wherein the third quench stage comprises a second condensate outlet, the process further comprising the step of withdrawing the third liquid fraction from the second condensate outlet and combining it with the clarified aqueous stream.

16-75. (Canceled)

76. (New) A process for quenching a reactor effluent stream from an oxygenate to olefins reactor, the process comprising the steps of:

(a) quenching the reactor effluent stream in a first quench stage with a first quench medium comprising an aqueous solution to form a first liquid fraction and a first effluent stream, wherein catalyst fines are washed from the reactor effluent stream into the first liquid fraction;

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- (b) quenching the first effluent stream in a second quench stage with the first quench medium producing a second liquid fraction and a second effluent stream, wherein the second liquid fraction is cooled to form the first quench medium [claim 6];
- (c) settling catalyst fines entrained in the first liquid fraction in a first settling vessel;
- (d) removing at least a portion of the first liquid fraction to a second settling vessel and forming a clarified aqueous liquid [par 0086]; and
- (e) removing the clarified aqueous liquid from the second settling vessel.

77. (New) The process of claim 76, wherein the clarified aqueous liquid removed from the second settling vessel is processed to remove methanol.

78. (New) The process of claim 77, wherein the processing to remove methanol is by distillation.

79. (New) The process of claim 76, wherein at least a portion of the first liquid stream in the first settling vessel is removed as a concentrated fines stream.